



Extremely cold and hot temperatures increase the risk of ischaemic heart disease mortality: Epidemiological evidence from China

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Year: 2013
Journal: Heart (British Cardiac Society). 99 (3): 195-203

Abstract:

OBJECTIVE: To examine the effects of extremely cold and hot temperatures on ischaemic heart disease (IHD) mortality in five cities (Beijing, Tianjin, Shanghai, Wuhan and Guangzhou) in China; and to examine the time relationships between cold and hot temperatures and IHD mortality for each city. **DESIGN:** A negative binomial regression model combined with a distributed lag non-linear model was used to examine city-specific temperature effects on IHD mortality up to 20 lag days. A meta-analysis was used to pool the cold effects and hot effects across the five cities. **PATIENTS:** 16 559 IHD deaths were monitored by a sentinel surveillance system in five cities during 2004-2008. **RESULTS:** The relationships between temperature and IHD mortality were non-linear in all five cities. The minimum-mortality temperatures in northern cities were lower than in southern cities. In Beijing, Tianjin and Guangzhou, the effects of extremely cold temperatures were delayed, while Shanghai and Wuhan had immediate cold effects. The effects of extremely hot temperatures appeared immediately in all the cities except Wuhan. Meta-analysis showed that IHD mortality increased 48% at the 1st percentile of temperature (extremely cold temperature) compared with the 10th percentile, while IHD mortality increased 18% at the 99th percentile of temperature (extremely hot temperature) compared with the 90th percentile. **CONCLUSIONS:** Results indicate that both extremely cold and hot temperatures increase IHD mortality in China. Each city has its characteristics of heat effects on IHD mortality. The policy for response to climate change should consider local climate-IHD mortality relationships.

Source: <http://dx.doi.org/10.1136/heartjnl-2012-302518>

Resource Description

Exposure : ☒

weather or climate related pathway by which climate change affects health

Air Pollution, Meteorological Factors, Temperature

Air Pollution: Particulate Matter, Other Air Pollution

Air Pollution (other): NO2

Temperature: Extreme Cold, Extreme Heat

Geographic Feature: ☒

resource focuses on specific type of geography

Climate Change and Human Health Literature Portal

Urban

Geographic Location: ☒

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: China

Health Impact: ☒

specification of health effect or disease related to climate change exposure

Cardiovascular Effect

Cardiovascular Effect: Other Cardiovascular Effect

Cardiovascular Disease (other): ischaemic heart disease mortality

Resource Type: ☒

format or standard characteristic of resource

Research Article

Timescale: ☒

time period studied

Time Scale Unspecified